LINAC COMMISSIONING FORM

24-sep-2001

Major Category: DTL Tank 2-6

Sub-Category: Beam Subcategory

Sub-System (e.g. beam emittance, or BPM etc.): BPM,BCM, WSs, and Faraday cup.

Objective: Understand the diagnostics beam response to low repetition rate (.25 Hz-10Hz), pulse length 1 to 100 microsecond. We will use short pulses for the WSs and longer ones for the BPMs. Compare the differential measurements with the models to verify the diagnostics functionalities.

Requested by: Saeed Assadi and Mike Plum, Diagnostic team.

Date Proposed: TBD

Estimated Time to Complete: 5 shifts

Estimated Manpower to Complete: 20 man-shift

Priority/Order: Highest

Basic Equipment Needs (e.g. which diagnostics): All diagnostics listed above.

Special Equipment Needs: Spectrum analyzers, Scopes, Network Analyzer and TDR

Software/Application needs: Standard diagnostic drives and LabView programs. EPICS EDMs, models with Matlab interface to EPICS.

Input Beam Requirements: Short pulses, Pulse on demand, total control of beam on/off condition. Stable beam (current vs. pulses).

Other prerequisites: Timing input, MPS, EPICS time plots.

Correlations Sought: Beam calibration of the diagnostics, time of flight, comparison of the BPM intensity measurements with the BCMs.

Procedure: Issue beam on demand aggregate with consistent pulse length compatible with intrusive vs. non-intrusive diagnostics device and systematically commission a diagnostic. For example, BPM's are commissioned by understanding their beam intensity dependence, position vs. corrector setting and comparing the results with the models. Position measurements as a function of the longitudinal mismatch or variable bunch length. RMS position measurements as a function of the transverse beam emittance. Detailed steps will be listed later on.

Supporting Computations: Available networking, EPICS, RTDL, timing module, and database.

Problems Expected: None that we cannot solve (we hope).

Comments:

Date Completed LANL: **Date Completed ORNL:**

Results:

Problems Encountered: